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**AN ENVIRONMENTAL PERSPECTIVE ON
COLLABORATION IN LARGE ECOSYSTEM
RESTORATION PROCESSES**

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NATURAL RESOURCES LAW CENTER
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by Daniel F. Luecke

I. Definitions of Ecosystem Restoration

The term ecosystem restoration brings to mind a number of possible definitions. To list only a few:

- a. Ecosystem restoration is "... the restoration of habitat to pre-disturbance conditions...";
- b. Ecosystem restoration is "...recreating the historical configuration of a given habitat or region...while accommodating human communities..."; or
- c. Ecosystem restoration is "...re-establishing a balance in ecosystem structure and function to meet the needs of plants, animals, and human communities..."

As I employ the term in this outline, I will use it to mean the third definition, re-establishment of a balance in structure of function. It is clear that this definition is part scientific – structure and function – and part political – meeting the needs of human communities. It is the combination of the scientific constrained by political reality that, on the one hand makes restoration feasible and, on the other, complicates the science.

II. Nature of the Ecosystem Restoration Process for Large Systems

I have no specific geographic dimensions to propose when I use the phrase "large systems," but in some loose way I am thinking of areas that exceed 100 square miles. The best examples of large ecosystem restoration are the Sacramento-San Joaquin delta (CalFed process), Columbia River,

Everglades, Upper Colorado River, and the Platte River. All share a certain set of characteristics. They are:

- a. multi-jurisdictional within a given state;
- b. multi-party in terms of user interests;
- c. multi-agency at both the state and federal levels; and
- d. with, the exception of the Sacramento delta and the Everglades, multi-state.

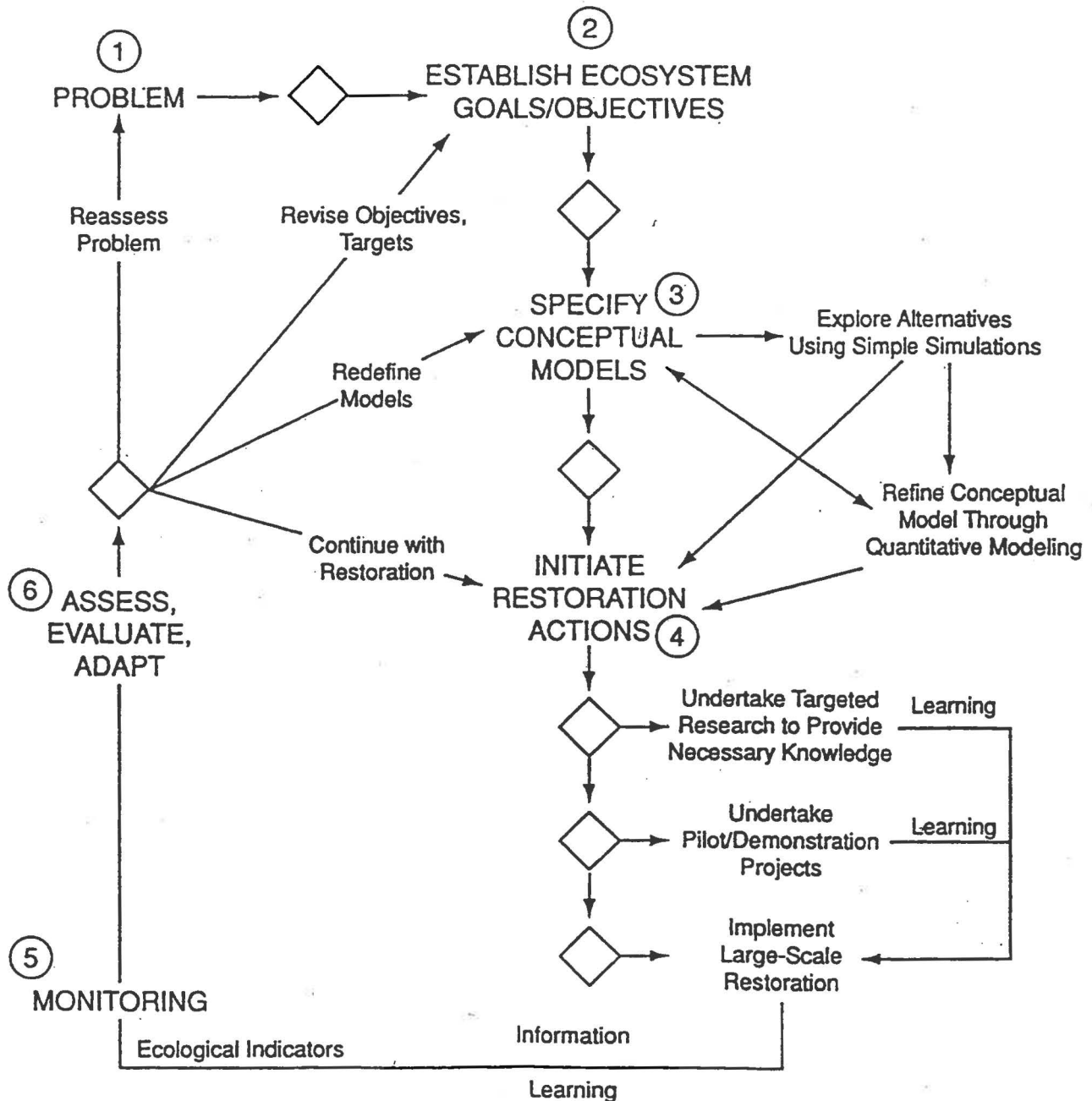
III. Structure of Restoration Process for Large Systems (Adaptive Management)


Ecosystem restoration processes are by their very nature experimental. There is very limited experience in this area, there is no common set of guiding principles, and, for large systems in particular, there are few if any successful examples to which one can point. By its very nature, a restoration process must be adaptive, i.e., it must rely on an approach that is incremental and that embodies a monitoring, assessment, and evaluation protocols that are sufficient to provide information on the effects of restoration activities. Further, these monitoring and assessment protocols must be linked to the restoration enterprise in a way that allows modifications to and enhancements of restoration activities. As shown in Figure 1., large ecosystem restoration process has several key components:

- a. Vision of Restoration: a description of what the restoration of balance in the structure and function of the ecosystem would look like (this is not necessarily a straightforward task, given that very limited data may be available on structure let alone function);
- b. Problem Statement: a determination of the geographic bounds of the ecosystem and definitions of the ecological processes, habitat, species, and interactions (both spatial and intertemporal) affected by the problem;

FIGURE 1.

DIAGRAM OF THE ADAPTIVE MANAGEMENT PROCESS



Note:  indicates important decision node in the process.
See text for description of the various stages.

- c. Goals Development (and Objectives): articulation of clear, tangible, and measurable outcomes that relate to the vision of restoration;
- d. Construct Conceptual Model(s) of Restoration: conceptual description(s), based on available data, knowledge, and judgement, of structure and function that can lead directly to potential restoration actions (model(s) should highlight key uncertainties and data gaps);
- e. Development and Initiation of Restoration Measures (Experimentation): based on the conceptual model(s), develop and initiate targeted research (to resolve critical issues about structure and function), pilot or demonstration projects (to determine the practicality and effectiveness of restoration actions), and/or full-scale implementation measures (in cases where there is reasonable certainty they will achieve a desired restoration objective);
- f. Monitoring of Outcomes: data gathering to monitor ecological indicators (e.g., abundance, macro-habitat characteristics, rates of change, nutrient cycling, energy flow, etc.) based on goals and objectives and on the important elements of the conceptual model(s);
- g. Assessment and Evaluation of Outcomes: quantitative determination of whether restoration actions have met the stated goals and objectives in the context of the conceptual model(s); and
- h. Based on Assessment, restatement of problem, modification of goals, refinement of conceptual model: use of the monitoring data and its assessment to problem definition, goals and objectives, conceptual model(s), and restoration actions.

The process is fundamentally iterative. A question to be addressed below is whether it is fundamentally collaborative.

IV. Different Views of Goals of Ecosystem Restoration Processes

In large ecosystem restoration processes, there is invariably an issue of compliance with federal law, usually either the Clean Water Act, the Endangered Species Act, or both. With the force of federal statute moving the process, a question arises as to the fundamental motivation of the various interests involved.¹ I would assert that, among the four major groups that are typically found involved, while all may support the vision of restoration, each has its own "undeclared" goal in the process.

- a. Federal regulatory agency perspective: agencies seek compliance with statute and regulations;
- b. State resource agency perspective: agencies accept compliance, but only to the extent that it does not overburden the state's resource users;
- c. Resource user perspective: users seek certainty with respect to establishment of goals and objectives (once in place they do not want to see them changed), the development of restoration actions, and costs;
- d. Environmental perspective: environmentalists are interested in a vision that is truly balanced (not biased in the interest of resource users), in an adaptive approach that will lead to real restoration of structure and function, and in restorations measures that are not overly constrained by existing resource use patterns.

It remains an open question as to whether these very different perspectives can be accommodated in restoration processes.

¹The characteristics of ecosystem restoration tend to reverse the dynamics of traditional environmental advocacy efforts. Instead of working to prevent future activities that degrade environmental quality, in restoration we seek to reverse yesterday's damages. This changes the dynamics of the relationships of the various stakeholders to the laws and processes that drive decision-making and action.

V. The Role of Science

Science plays a fundamental role in activities (d) through (h) described in Section III above. From the development of conceptual models through data gathering, monitoring, assessment, and redefinition, science and the scientific method must be the guide. Without sound, peer-reviewed science, the restoration of a large ecosystem cannot possibly succeed.

VI. Is Large System Ecosystem Restoration Inherently Collaborative²?

- a. Cooperation fundamental?
- b. Management across jurisdictions?
- c. Management across interests?
- d. Other

VII. The Flaws in Collaboration on Large Ecosystem Restoration Projects from an Environmental Perspective

There are a whole host of characteristics common to large ecosystem restoration processes that make them unattractive (if hard to avoid) for environmentalists.

- a. Collaborative forums for ecosystem restoration are tailor-made for each process, thus there are rarely, if ever, standard operating rules, a situation which always puts minority representatives (where environmentalists find themselves) at disadvantage. There are an enormous number of discontinuities such as lax enforcement of rules of procedure, changing cast of participants, and haphazard attendance at meetings that make progress scattered and unfocused.

² Collaboration does not imply consensus. Consensus is merely one way of reaching a decision (others would be simple majority or super majority) in a collaborative process.

- b. In collaborative process, scientific uncertainty invariably slows progress. The data to develop conceptual models and establish restoration actions are seldom sufficient to dispel all doubt. This inescapable uncertainty is often used by process participants (usually resource users and state agencies) to call for more data before any action is taken. In a collaborative setting, it is difficult to overcome this resistance to action.
- c. Deadlines always slip with few adverse consequences for those who cause slippage. In large system restoration, some delay is inevitable. Experimentation, particularly in an uncontrolled natural setting, always generates unexpected results. In these situations, there is a reluctance to impose consequences for delay. As a result, sanctions are rarely if ever proscribed.
- d. Process pace is not a common interest of all parties, i.e., it is in the interest of some parties (usually environmentalists) to have process move quickly, while, for others (usually resource users), there is an interest in a slow pace. From an environmental perspective (as a minority), this alignment of interests makes it very difficult to force the pace. Minorities seldom can.
- e. In collaborative process, funds come from several sources, including federal agencies, state bureaus, and resource users. State funding always implicates state legislatures, arch opponents of ecosystem restoration (especially if endangered species involved). With funding authority, legislatures often seek oversight, again affecting process schedules.
- f. Multi-interest processes are subject to hostage-taking, often by parties that share interests. This is a problem in any multi-party process where interests are linked in arenas outside the process. One party may threaten (or take) an action in another forum that makes restoration actions very difficult or impossible.

- g. Processes almost always depend on use of (or change in) state law, again implicating state legislatures (hostile forum).
 - 1. State legislatures may be reluctant or unwilling to make necessary changes to state law.
 - 2. State institutions are frequently unable to carry burden placed on them by agreements negotiated within the collaborative process.
 - 3. Legislatures not infrequently pass laws aimed at one target that are (perhaps unintentionally) antagonistic to implementation of restoration actions.
- h. In a multi-party process, the efficacy and weight of one interest (even more so for a minority party) is often imperceptible. Its influence is thin and diffuse. At best, one party can usually do little more than form a coalition (or voting block) to stop an action it does not support. It cannot move the process in a direction it thinks it should go. It may be able to create a stalemate, but not progress. When minority interests with relatively small staffs are faced with this situation, they often see the opportunity cost of participation as very high compared with what they are able to achieve.
- i. Given the slow pace and low profile of most restoration processes, fundraising, particularly from foundations, is very difficult to sustain. Environmental organizations raise funds based on what they do and what they can demonstrate that they have accomplished. A substantial portion of their funding comes from tax exempt foundations. Competition for foundation funds has increased in the last two decades and foundations are increasingly seeking short-term "quantifiable goals" as the basis for funding and grant renewals. Slow-paced, multi-party collaborative processes do not standup well in this competitive climate.

VIII. Is there an Alternative to Collaboration for Environmentalists in the Case of Large Ecosystem Restoration?

There are always alternatives. The question is whether the alternatives offer an effective means of avoiding the flaws describe above and at the same time accomplishing reasonable ecosystem restoration goals. The list that comes immediately to mind includes:

- a. Litigation directed at mandatory duties of federal resource and regulatory agencies;
- b. Pressure on the process from the outside relying on media and public mobilization;
- c. Direct action; and
- d. Ignoring the collaborative process (i.e., avoiding the opportunity cost of participation) and devoting resources elsewhere.

Each has its own advantages and shortcomings, but with the exception of litigation (when a mandatory duty is clear), forcing (as opposed to preventing) action is unlikely, if not impossible.

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